IMPORTANT SAFETY INFORMATION FOR MSE 360

Last updated on 3/22/2023   
**TA**: Allen Guo, allenguo2025@u.northwestern.edu

NUANCE TEM Manager: Xiaobing Hu, xbhu@northwestern.edu

Safety education is mandatory for all TEM/SEM users. Only those who receive safety training and sign the liability agreement can use EPIC facilities. Please do not touch or use anything in EPIC if you do not know the consequence of your actions. You should ask EPIC staff first if you are not sure about the consequence of your actions.

Before using the EPIC facility,

1. KNOW the established emergency procedures for this building and work area.
2. KNOW two means of exit from your area.
3. KNOW the locations of fire alarm pull stations.
4. KNOW the locations of portable fire extinguishers and how to use them.
5. KNOW the location of EPIC Safety Desk Book and how to find information in it.
6. KNOW the location of Materials Safety Data Sheets (MSDSs) and how to read it.
7. KNOWthelocationofthenearestfirstaidkitandhowtouseit.

Required reading (click & read)

1. NU Emergency Response (<https://www.northwestern.edu/emergency-management/>)
2. NUANCE Emergency Response Procedures (<http://www.nuance.northwestern.edu/about/emergency.html>).
3. NU Safety Plan ( http://www.northwestern.edu/research-safety/index.htm ).
4. NU Chemical and Biological Safety in Laboratories (CBSL) (http://www.research.northwestern.edu/ors/safety/general/index.html
5. NU Hazard Communication Program (<https://www.northwestern.edu/risk/environmental-health-safety/facility-safety/hazard-communication.html>).
6. NU radiation safety (<https://researchsafety.northwestern.edu/safety-information/radiation-safety-handbook.html>)
7. Tech Building Safety Plan (<https://www.mccormick.northwestern.edu/documents/faculty-staff-resources/emergency/tech-ford-evacuation-guidelines-brochure-template.pdf>).
8. EPIC Facility Rules. http://www.nuance.northwestern.edu/docs/epic-pdf/epic-rules.pdf

General lab rules

1. No smoking, food, or drinks AT ANY TIME
2. Yes Personal Protective Equipment at ALL TIMES

Personal Safety in TEM

* Liquid nitrogen: Complete the ORS training on LN2 before the first lab session. Wait until your dewar is full while pouring LN2 from the tanks. Be careful when you hook the cold finger Dewar on TEMs and when you pour LN2 into the cold trap while standing on a stepladder. Use cryogenic gloves at all times while handling LN2.
* High voltage: Stay away from the high voltage generator and cables to avoid electric shock. The voltage for the TEM is 200,000 V (compared to a normal voltage of 120 V for your home appliances)
* Radiation: Radiation is shielded in TEMs and is within the safe limit if the facilities are used properly.

Microscope’s safety in TEM

*TEMs are complicated high voltage instruments. You need to treat them cautiously while using them. You MUST NOT touch anything you do not know. You should always ask staff if you are not confident to use the function of related facilities.*

1. Read and follow the instruction manual carefully.
2. Vacuum: Make sure that vacuum is always good by checking the panels; follow the rules when you load/unload specimen. Objective aperture must be out when loading/unloading samples.
3. Specimen loading: Transfer your grids using vacuum tweezers; check the grid cover and the O-ring to make sure it is clean (no dust or lint).
4. Liquid nitrogen: Fill cold trap/finger with LN2 at the beginning of your experiment and top it up every six hours during your session
5. Do not change the sample holder height when the Obj aperture is in the column.
6. If you are not confident of the consequences resulted from your action, STOP and just ask the staff.

I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ certify that I am trained on safety for the use of the TEM facilities and dark rooms. I sign below to release and waives any and all claims whatsoever against Northwestern University, its trustees, officers, employees and agents from any liability or any loss, cost, damage, expense, injury or death arising from or in any manner connected with or related to your use of the facilities and equipment.

|  |  |  |  |
| --- | --- | --- | --- |
| Department | Advisor | Signature | Date |
|  |  |  |  |

**NUcore login system**

Know how to reserve, cancel and log in/out TEM and SEM sessions. You may do it by using any internet connected device.